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APPLICATION NO.	FILING DATE	FIRST NAMED INVENTOR	ATTORNEY DOCKET NO.	CONFIRMATION NO.
09/823,739	03/30/2001	Michael J. Gormish	74451.P132	5966

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EXAMINER

JOHNSON, TIMOTHY M

ART UNIT	PAPER NUMBER
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2625

DATE MAILED: 03/02/2004

12

Please find below and/or attached an Office communication concerning this application or proceeding.

Office Action Summary

Application No.

09/823,739

Applicant(s)

GORMISH ET AL

Examiner

Timothy M Johnson

Art Unit

2625

— The MAILING DATE of this communication appears on the cover sheet with the correspondence address —

Period for Reply

A SHORTENED STATUTORY PERIOD FOR REPLY IS SET TO EXPIRE 3 MONTH(S) FROM THE MAILING DATE OF THIS COMMUNICATION.

- Extensions of time may be available under the provisions of 37 CFR 1.136(a). In no event, however, may a reply be timely filed after SIX (6) MONTHS from the mailing date of this communication.
- If the period for reply specified above is less than thirty (30) days, a reply within the statutory minimum of thirty (30) days will be considered timely.
- If NO period for reply is specified above, the maximum statutory period will apply and will expire SIX (6) MONTHS from the mailing date of this communication.
- Failure to reply within the set or extended period for reply will, by statute, cause the application to become ABANDONED (35 U.S.C. § 133). Any reply received by the Office later than three months after the mailing date of this communication, even if timely filed, may reduce any earned patent term adjustment. See 37 CFR 1.704(b).

Status

- 1) ☐ Responsive to communication(s) filed on ____.
- 2a) ☐ This action is FINAL. 2b) ☒ This action is non-final.
- 3) ☐ Since this application is in condition for allowance except for formal matters, prosecution as to the merits is closed in accordance with the practice under *Ex parte Quayle*, 1935 C.D. 11, 453 O.G. 213.

Disposition of Claims

- 4) ☒ Claim(s) 1-40 is/are pending in the application.
- 4a) Of the above claim(s) ____ is/are withdrawn from consideration.
- 5) ☐ Claim(s) ____ is/are allowed.
- 6) ☒ Claim(s) 1-40 is/are rejected.
- 7) ☐ Claim(s) ____ is/are objected to.
- 8) ☐ Claim(s) ____ are subject to restriction and/or election requirement.

Application Papers

- 9) ☒ The specification is objected to by the Examiner.
- 10) ☒ The drawing(s) filed on 26 August 2002 is/are: a) ☐ accepted or b) ☒ objected to by the Examiner.
Applicant may not request that any objection to the drawing(s) be held in abeyance. See 37 CFR 1.85(a).
Replacement drawing sheet(s) including the correction is required if the drawing(s) is objected to. See 37 CFR 1.121(d).
- 11) ☐ The oath or declaration is objected to by the Examiner. Note the attached Office Action or form PTO-152.

Priority under 35 U.S.C. § 119

- 12) ☐ Acknowledgment is made of a claim for foreign priority under 35 U.S.C. § 119(a)-(d) or (f).
- a) ☐ All b) ☐ Some * c) ☐ None of:
1. ☐ Certified copies of the priority documents have been received.
2. ☐ Certified copies of the priority documents have been received in Application No. ____.
3. ☐ Copies of the certified copies of the priority documents have been received in this National Stage application from the International Bureau (PCT Rule 17.2(a)).

* See the attached detailed Office action for a list of the certified copies not received.

Attachment(s)

- 1) ☒ Notice of References Cited (PTO-892)
- 2) ☐ Notice of Draftsperson's Patent Drawing Review (PTO-948)
- 3) ☐ Information Disclosure Statement(s) (PTO-1449 or PTO/SB/08)
Paper No(s)/Mail Date ____.
- 4) ☐ Interview Summary (PTO-413)
Paper No(s)/Mail Date ____.
- 5) ☐ Notice of Informal Patent Application (PTO-152)
- 6) ☐ Other: ____.

Art Unit: 2625

Drawing

1. Figures 1 and 2A should be designated by a legend such as --Prior Art-- as only that which is old is illustrated. (See MPEP § 608.02(g)). See Applicant's specification on page 9 and the paragraph bridging pages 20-21.

A proposed drawing correction or corrected drawings are required in reply to this Office action to avoid abandonment of the application. The objection to the drawings will not be held in abeyance.

Disclosure

2. The title of the invention is not descriptive. A new title is required that is clearly indicative of the invention to which the claims are directed.

The Examiner suggests the following title:

"Parallel block MQ Arithmetic Image Compression of Wavelet Transform Coefficients for JPEG 2000"

Claim Objections

3. Claims 2 and 22 are objected to because of the following informalities:

For claim 2, line 2; and claim 22, line 2, "to same" is unclear. Should the claim recite "to some" or "the same"? As written, it is not clear which meaning is intended. Even though there is a minor grammatical error, there is a significant difference in scope between the two meanings.

Appropriate correction is required.

Claim Rejections - 35 USC § 112

4. The following is a quotation of the second paragraph of 35 U.S.C 112:

The specification shall conclude with one or more claims particularly pointing out and distinctly claiming the subject matter which the applicant regards as his invention.

5. Claims 1-40 are rejected under 35 U.S.C. 112, second paragraph, as being indefinite for failing to particularly point out and distinctly claim the subject matter which applicant regards as the invention.

For claim 1, line 5; claim 2, line 2; claim 21, line 5; and claim 22, line 2, "to the extent possible" is vague and indefinite. The metes and bounds are clearly not discernable. To what "extent" is the Applicant referring? Is the Applicant referring to a large extent or a small extent, and if so, exactly how large or small?

Claim Rejections - 35 USC § 102

6. The following is a quotation of the appropriate paragraphs of 35 U.S.C. 102 that form the basis for the rejections under this section made in this Office action:

A person shall be entitled to a patent unless --
(e) the invention was described in (1) an application for patent, published under section 122(b), by another filed in the United States before the invention by the applicant for patent or (2) a patent granted on an application for patent by another filed in the United States before the invention by the applicant for patent, except that an international application filed under the treaty defined in section 351(a) shall have the effects for purposes of this subsection of an application filed in the United States only if the international application designated the United States and was published under Article 21(2) of such treaty in the English language.

7. Claims 1-2 and 21-22 are rejected under 35 U.S.C. § 102(e) as being anticipated by Kajiwara et al., 2001/0003544.

For claim 21, means for decomposing input data into code blocks is provided by Kajiwara in at least paragraphs 110, 114-115, and 118-120 for example. Means for

Art Unit: 2625

assigning the code blocks, on a code-block basis, to MQ coders to code the code blocks in parallel to balance, to the extent possible, an amount of coding to be performed by each of the MQ coders is provided by Kajiwara in at least paragraphs 115, 118-120, and 134-135, where the amount of code assigned to the MQ coders is clearly controlled in parallel to different extents as possible.

For claim 22, wherein each of the MQ coders codes, to the extent possible, to same number of coefficients is provided by Kajiwara in at least paragraphs 115, 118-120, and 134-135.

For claims 1-2, see the rejection of at least claims 21-22.

Claim Rejections - 35 USC § 103

8. The following is a quotation of 35 U.S.C. 103(a) which forms the basis for all obviousness rejections set forth in this Office action:

(a) A patent may not be obtained though the invention is not identically disclosed or described as set forth in section 102 of this title, if the differences between the subject matter sought to be patented and the prior art are such that the subject matter as a whole would have been obvious at the time the invention was made to a person having ordinary skill in the art to which said subject matter pertains. Patentability shall not be negated by the manner in which the invention was made.

9. Claims 3, 5, 7, 9, 11, 13, 15-20, 23, 25, 27, 29, 31, 33, and 35-40 are rejected under 35 U.S.C. 103(a) as being unpatentable over Kajiwara et al., 2001/0003544, as applied to claims above, and further in view of Ogata, 6,332,043.

Art Unit: 2625

For claims 23, 25, 27, 29, 31, 33, 35, 37, and 39, exemplary claim 23 will be used as a base claim, as all these claims are slight variations of the same conceptual idea. In all cases, Applicant teaches four, six, or eight MQ coders. Claim 23 is used for explanation without loss of generality as follows:

Claim 23 recites wherein the MQ coders comprises first, second, third, and fourth MQ coders, wherein the first MQ coder is assigned code blocks corresponding to LL3, HL3, LH3, HH3, HL2, LH2, HH2, HL1, and HH1 luminance subbands; the second MQ coder is assigned code blocks corresponding to LL3, HL3, LH3, HH3, HL2, LH2, HH2, HL1, and HH1 subbands of a first set of chrominance subbands; the third MQ coder is assigned code blocks corresponding to LL3, HL3, LH3, HH3, HL2, LH2, HH2, HL1, and HH1 subbands of a second set of chrominance subbands; and the fourth MQ coder is assigned code blocks corresponding to a LH1 luminance subband, a LH1 subband of the first set of chrominance subbands, and LH1 subband of the second set of chrominance subbands. Similar to Applicant's claims, Kajiwara provides for at least three different variations of the luminance and chrominance for the different coding of the subbands. In the "0" selection for 1:1:1 YUV in paragraph 65, Kajiwara provides for three MQ coders for the LL, LH0, HL0, and HH0 subbands for the Y, U, and V coders. For the "1" selection for 2:1:1 YUV in paragraph 66, Kajiwara provides for the Y luminance subbands of LL, LH, HL, and HH; and LL, HL, LH, HH, and H for the U and V chrominance subbands. For the "2" selection for 4:1:1 YUV in paragraph 67, Kajiwara provides for the Y luminance subbands of LL, LH, HL, and HH; and LL, HL0, LH0, and HH0 for the U and V chrominance subbands. Clearly, this is considered only

Art Unit: 2625

exemplary, since Kajiwara further provides for at least another embodiment with respect to Figs. 14A-B, which gives a different choice of subbands for each of the different selections. Kajiwara further teaches in the Other Embodiments section in paragraph 134 that the wavelet transform filter can be changed, so that further different selections are clearly well within the scope of Kajiwara. However, Kajiwara does not explicitly recite that more than three MQ coders can be used, this is also considered well within the scope of Kajiwara as suggested in at least paragraph 134. In any case, Ogata also teach a similar wavelet transform filter based hierarchical decomposition in at least the paragraph bridging cols. 19-20, the wavelet transform coefficients of which are also arithmetically encoded, and that the arithmetic coders are different based on the classification of the wavelet coefficients (the MQ coder is an arithmetic coder). Thus, Ogata also teaches different arithmetic coders for different sets of wavelet coefficients. Ogata further teaches the well known conventionality of having an arbitrary classification of the wavelet coefficients, thus being similar to that of Kajiwara, and further providing for the slight variations of the wavelet coefficients of the claims. In addition to teaching an arbitrary classification of wavelet coefficients like the claims, Ogata also clearly teach that there can be an arbitrary number of arithmetic encoders by having an arbitrary number of models. This idea can clearly be extended for use with/as the MQ coders of Kajiwara. It would've been obvious to one having ordinary skill in the art at the time the invention was made to use an arbitrary number of arithmetic coders as taught by Ogata, since this is already suggested by Kajiwara in at least paragraph 134, and because Ogata teach that the arithmetic encoders use

Art Unit: 2625

different models corresponding to the different classes of wavelet coefficients having different statistical properties, thus providing for more efficient compression and accuracy.

For claims 36, 38, and 40, wherein the code blocks is 4:1:1 data is provided by Kajiwara where cited above.

For claims 3, 5, 7, 9, 11, 13, and 15-20, see the rejection of at least claims 23, 25, 27, 29, 31, 33, and 35-40 above.

10. Claims 4, 6, 8, 10, 12, 14, 24, 26, 28, 30, 32, and 34 are rejected under 35 U.S.C. 103(a) as being unpatentable over Kajiwara et al., 2001/0003544, and Ogata, 6,332,043, as applied to claims above, and further in view of Shimura et al., 6,486,981.

For claims 10, 12, 14, 30, 32, and 34, Kajiwara does not explicitly provide for the well known and conventional 4:2:2 format, but is considered well within the scope of Kajiwara as a plurality of other formats of YUV data is provided including the claimed 4:1:1 format. Shimura teaches the well known 4:2:2 format in at least the abstract, and can clearly be used with the invention of Kajiwara, where Kajiwara also selects from different color formats to include, inter alia, 4:1:1. It would've been obvious to one having ordinary skill in the art at the time the invention was made to use the 4:2:2 format, since this provides for higher fidelity than the formats of Kajiwara, and because the formats of Kajiwara should be considered exemplary, and that one of ordinary skill

Art Unit: 2625

would understand that other formats, such as 4:2:2, are well within the scope of Kajiwara (see paragraphs 135, 144, and the claims of Kajiwara).

For claims 4, 6, 8, 24, 26, and 28, Kajiwara does not explicitly provide for the well known and conventional 4:4:4 format, but is considered well within the scope of Kajiwara as a plurality of other formats of YUV data is provided including the claimed 4:1:1 format. Shimura teaches the well known 4:4:4 format in at least fourth full paragraph in c. 6, and can clearly be used with the invention of Kajiwara, where Kajiwara also selects from different color formats to include, inter alia, 4:1:1. It would've been obvious to one having ordinary skill in the art at the time the invention was made to use the 4:4:4 format, since this provides for significantly higher fidelity, for which there is no loss because of sub-sampling, than the formats of Kajiwara, and because the formats of Kajiwara should be considered exemplary, and that one of ordinary skill would understand that other formats, such as 4:4:4, are well within the scope of Kajiwara (see paragraphs 135, 144, and the claims of Kajiwara).

Contact Information


11. Any inquiry concerning this communication or earlier communications from the examiner should be directed to Timothy M Johnson whose telephone number is 703-306-3096. The examiner can normally be reached on Monday – Friday from 5:30 to 2:00.

Art Unit: 2625

If attempts to reach the examiner by telephone are unsuccessful, the examiner's supervisor, Bhavesh M. Mehta, can be reached on Monday – Friday from 9:30 to 5:00. The fax phone number for the organization where this application or proceeding is assigned is 703-872-9306.

Information regarding the status of an application may be obtained from the Patent Application Information Retrieval (PAIR) system. Status information for published applications may be obtained from either Private PAIR or Public PAIR. Status information for unpublished applications is available through Private PAIR only. For more information about the PAIR system, see <http://pair-direct.uspto.gov>. Should you have questions on access to the Private PAIR system, contact the Electronic Business Center (EBC) at 866-217-9197 (toll-free).

Timothy M. Johnson
Patent Examiner
Art Unit 2625
February 27, 2004


TIMOTHY M. JOHNSON
PRIMARY EXAMINER